

## REPORT

## CD NO.

DATE DISTR 28 October 1954

NO. OF PAGES:

NO. OF ENCLS.  
(LISTED BELOW)

SUPPLEMENT TO  
REPORT NO.

SUPPLEMENT TO  
REPORT NO.

THIS IS UNEVALUATED INFORMATION

- ### Particles of cosmic radiation

SECRET - U.S. OFFICIALS ONLY

OSI	EX	
-----	----	--

**Page Denied**

SECRET

-US OFFICIALS ONLY

25X1

- 2 -

<u>Institute of Technical Chemistry:</u>	Piezooscillator
<u>Dresden Institute of Technology</u>	Debye-effect
X-Ray Laboratory:	High-pressure interferometer
Institute of Experimental Physics:	Electron optics
Institute of Thermodynamics:	Electron reflector
Institute of High Frequencies and	Atmospherics
Electron Tubes:	Micro chronometer
<u>Leipzig University</u>	Technical analyses of liquids
Institute of Physics:	Silicons
Institute of Physiology:	X-ray microstructure tests of hormones
<u>Jena University</u>	Electron microscope
Institute of Technical Physics:	Packet tower (sic)
	Centimeter waves and centimeter spark gaps, high frequencies
	Spectroscopy of dipole liquids
	Measurement of sonic speeds
	Ultrasonic diagnostics and dosimetry in biological tissues
	Counter tube discharge mechanism
	Testing of neutron counter tubes
	Neutron counter tube
	4-MeV betatron
	Mass spectrograph
	X-ray spectrometer
Institute of Physics:	Silicon
<u>Rostock University</u>	Counter tube mechanism
Institute of Chemistry:	Measurement of sonic speeds in liquids
Institute of Physics:	Structural problems of liquids
Institute of Technical Physics:	Wind tunnel.
Institute of Theoretical Shipbuilding:	

3. At the Jena Research Institute for Magnetic Materials the individual projects were worked on by the following physicists, previously students of former institute chief Professor Kersten (fnu):

<u>Project</u>	<u>Researcher</u>
Magnetic sound	Greiner (fnu)
Ferrites	Schroeder (fnu), a student of Professor Kordes (fnu) and Dr Hellermann (fnu) of the Hermsdorf Ceramics Plants.
Bitter-patterns	Elschner (fnu)
Melting alloys	Andrae (fnu)
Measuring instruments for magnetic fields	Schwabe (fnu) and Mager (fnu)
Elementary effects along the hysteresis loop	Mrs Greiner (fnu)
Ferromagnetic single crystals	Stephan (fnu)

In the activity report for June, Dr Mager, acting chief of the institute, stated that experiments were being conducted to find a procedure for measuring losses on transformer sheet metal and dynamo sheet iron and that ignition tests with sheet metals were being continued.

4. In early 1953, the Halle Institute of Experimental Physics did general optical research (ultra red) under the supervision of Institute Chief Professor Moench (fnu) and research work on semi-conductors under the control of Dr Guenther Blankenburg. Dr Struss (fnu), Dipl. Physiker Kassel (fnu) and Dr Schwieger (fnu) were young members of the institute staff.

SECRET

-US OFFICIALS ONLY

SECRET

-US OFFICIALS ONLY

- 3 -

5. At the II Institute of Physics at the Humboldt University, Professor Franz-Xaver Eder did research work on tensile strengths at high rates of breaking. According to the activity report of June 1953, the experimental equipment for zinc examinations was improved by a device facilitating a temperature adjustment of the sample between 50 centigrades below zero up to 150 centigrades above zero. By reducing the natural period of oscillation of the strength measuring system, it was possible to apply very high rates of breaking. During the experimental work, the number of apparatus was enlarged, which effected a high degree of accuracy in regard to the measurement and adjustment of the initial loading. Since the quartz cell (Quartzdose) to measure the loading had become inadequate, a new unit had to be produced. Furthermore a calibration unit was constructed to determine the absolute value of the alternate loading. A goniometer was under construction for the precise detection of single crystal orientation. An electron ray tube on which, in order to obtain a high number of registrations per picture, a rough television grating was marked, was used to record the individual displacements. The photographs taken by a narrow-film camera were evaluated. A registering device and a measuring amplifier for the pressure element were under construction. The project was initiated with theoretical research work conducted to prove the effect of the internal heat development produced by plastic deformations on the physical properties of the sample to be tested.
6. [redacted] the Institute of Materials at the Dresden Institute of Technology continued ignition tests with transformer sheet metals which had been previously conducted by the Thale Eisenwerk. In a conference at the Burg Rolling Mill the production process and the difficulties involved were discussed. The quality control office consented to examine the chemical nature of disturbing cover layers and give other assistance required. Dr Bingel (fnu) from Berlin suggested that the quality of sheet metals be improved by means of getters. After a detailed discussions this system was rejected as being of little value for large plants. [redacted]
7. In June 1953, the development of a fuel element was turned over from the Institute of Physical Chemistry of the Humboldt University to Professor Guenther Rienecker in Rostock, and a research project on cosmic shortwave radiation was turned over from the Jena University to the Potsdam Astro-Physical Observatory of the German Academy of Sciences.
8. On 29 April 1954, at a presidial meeting of the German Academy of Sciences (DAdW), it was announced that, effective 1 May 1954, the Institute of Magnetic Materials would be attached to the DAdW. The institute worked on the production of ferrites, ferromagnetic and ferrite materials, powdered magnetic materials and permanent magnetic substances. [redacted]  
Dr Albrecht Mager, a young scientist and professor at Jena University since 1 September 1953, became chief of the institute. Professor Schulz (fnu), however, an expert on magnetic materials, was expected soon to return from USSR and to take over the control of the institute.
9. In 1953, an experimental laboratory was installed for the analyses of cosmic radiation at the Halle Institute of Physics headed by Prof. Wilhelm Messerschmidt. An excavation, about 10 x 10 meters square and 15 meters deep, was made in the front yard of the institute and a tower-like building of reinforced concrete with an internal diameter of 3.20 meters was erected. The tower was scheduled to be completed by the spring of 1954. In this building Professor Messerschmidt planned to measure cosmic radiation 9 meters under the surface.<sup>2</sup>
10. [redacted] in 1953 the institute had been handling the following projects:
- Research on solid substances which was accomplished by means of X-ray structure analyses with an electron microscope operating at 30 to 40 kv which had been built at the institute.
  - Ultrasound.

SECRET

-US OFFICIALS ONLY

SECRET/

-US OFFICIALS ONLY

1-4-

11. Rumors indicating that Professor Messerschmidt worked on radar equipment probably originated from his summaries on radar characteristics and techniques which had been published in December 1951 and March and April 1952 in "Archiv fuer technisches Messen" (Archive for Technical Measurements). During the reported time, however, Messerschmidt definitely did not work any longer in this field. As in 1952, the 1953 budget of the institute amounted to 120,000 Eastmarks, 40,000 of which were to be spent on the erection of measuring instruments for cosmic radiation. In mid-1953, authorized staff personnel at the institute included 10 assistants, most of them working on their doctor thesis, 30 candidates and 3 mechanics. Each thesis was typed in ten copies of which 5 to 7 were distributed to various libraries in East Germany.

1. Comment. Professor Messerschmidt is chief of the Institute of Physics; Professor Moench is chief of the Institute of Experimental Physics at Halle University.
2. Comment. three research projects handled by the Institute of Experimental Physics at the Halle University, see Annex.

SECRET/

-US OFFICIALS ONLY

SECRET/

-US OFFICIALS ONLY

-5-

Annex

25X1

Research Projects of Professor Dr Messerschmidtat the Halle Institute of Physics1. Project F.3 - 167

- a. Analyses of compressive and tensile stress conditions, especially in reference to welded joints between different types of material and uncontrollable effects of pretreatments.
- b. Optical and radiographic strain analyses.
- c. Combined radiographic and optical strain analyses of variously shaped and notched as well as variously pretreated steel samples and of nonferrous metals. For this purpose, a hydraulic tensile testing machine was being built for the E-ray chamber.

DM 7,000.-

IV/1954

2. Project F.3 - 170

- a. Radiographic structure analyses of variously processed and treated metal surfaces.
- b. Radiographic structure analyses of metal surfaces.
- c. Radiographic microstructure analyses of superposed thin metal layers (including magnetic measurements of iron). Modifications of the evaporation process. Examinations by metal- and luminescence microscopes of deposited layers applied in liquid condition by means of metal sprays. Examinations of effects made visible by cauterization of surfaces, in radiographic microstructure pictures, regarding the connections to growth processes and adhesive power of the layers.

DM 10,000.-

IV/1954

3. Project F.3 - 171

- a. Microstructure analyses of non-metal materials to determine the synthesis of finely crystalline, highly dispersed characteristics.
- b. Microstructure analyses of non-metal materials.
- c. Application of radiographical microstructure method as well as the evaluation of X-ray intensity dispersed at minimum angles regarding the gelatine characteristics of paracrystalline and amorphous substances (possibly plastic materials, sprayed and evaporized layers and micro powder).

DM 10,000

II/1954

SECRET/

-US OFFICIALS ONLY

**Page Denied**